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(71) Applicant (*for all designated States except US*): HALDOR TOPSØE A/S [DK/DK]; Nymøllevej 55, DK-2800 Kgs. Lyngby (DK).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): NIELSEN, Poul, Erik, Højlund [DK/DK]; Rolandsvej 3, DK-3480 Frederiksberg (DK). JORGENSEN, Susanne, Laegsgaard [DK/DK]; Borgmester Schneidersvej 105, DK-2840 Holte (DK).

(74) Common Representative: HALDOR TOPSØE A/S; Nymøllevej 55, DK-2800 Kgs. Lyngby (DK).

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(54) Title: PROCESS FOR SYNTHESIS OF METHANOL

(57) Abstract: The invention provides a process for production of methanol from a feed stream rich in hydrogen carbon monoxide and carbon dioxide. The feed stream is converted to a converted process stream comprising methanol and small amounts of higher alcohols, aldehydes and ketones in the presence of a catalyst active in conversion of hydrogen and carbon monoxide into methanol. The converted process stream is cooled to a cooled process stream to 20-200°C. The cooled process stream is hydrogenated into a hydrogenated process stream rich in methanol and depleted in aldehydes and ketones in presence of a hydrogenation catalyst. The catalyst is active in conversion of aldehydes and ketones into alcohols in a process stream rich in methanol and further comprising hydrogen, carbon monoxide and carbon dioxide. The hydrogenated process stream is cooled to a cooled, condensed process stream, and subsequently the cooled, condensed process stream is separated into a gas phase and a liquid crude methanol phase.